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DETERMINING THE VALUE OF MODERN AND CONTEMPORARY FURNITURE DESIGN: AN EXPLORATORY INVESTIGATION

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Determining the Value of Modern and Contemporary Furniture Design: an Exploratory Investigation

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The paper analyses the formation of prices in the market of collectable furniture design. Given their aesthetic quality and symbolic significance modern and contemporary furniture design objects are increasingly exchanged in art auctions. However, reproducibility and other potential differences from traditional artworks set interesting challenges in studying auction price formation for this kind of goods. The paper documents the development of markets in modern and contemporary furniture design analysing how cultural and economic values interact in this emerging context and what are the distinctive features with respect to other traditional art markets. Moreover, using auction data for furniture design works by the most prominent designers of the XXth century, the determinants of price formation are analysed and discussed.

Keywords: Furniture Design, Auction, Hedonic pricing analysis

JEL Codes: Z11, D46

1. Introduction

This paper is a first attempt to discuss and analyse the formation of prices in the market of collectable furniture design. While originally conceived as functional goods, modern and contemporary design objects have entered in the last decades into the art domain and demand by collectors has soared.

We document the development of secondary and tertiary markets of this class of goods by highlight their emerging recognition as collectables or works of arts through a legitimation process carried out by museums and other actors in the art domain.

More specifically, modern furniture design arguably follows market dynamics similar to other collectables markets while contemporary furniture design shows patterns similar to the contemporary art world.

Crucially, this novel trend sets interesting challenges in understanding how cultural value emerge for specific modern and contemporary furniture design works and what are the determinants influencing their economic value relative to other more traditional artworks. This allows one to test predictions concerning the influence of designers' and products' characteristics on the formation of prices of collectable furniture design works.

To do so, we perform a preliminary quantitative exploration of the determinants of the auction prices of modern and contemporary furniture design using hedonic price technique. The analysis is preliminary as we use a sample of auction prices in the period 1998-2012 of the most valuable furniture products created by 47 prominent designers.

The paper is organized as follows: Section 2 documents the development of the market of collectable furniture design, Section 3 discusses cultural economic issues

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concerning the cultural and economic value of this type of goods, Section 4 presents the data and the empirical strategy, Section 5 shows the results of the hedonic price regression while Section 6 concludes.

2. The development of markets of collectable furniture design

The development of the market for collectable furniture design within the broader field of art markets is a quite recent phenomenon.

Although furniture design objects have entered for a long time in the sphere of artistic appreciation through museums' collections and major exhibitions (the design department of MoMA was founded in 1932 and major exhibitions on design were held back in the 70s and 80s), only just two decades ago secondary and tertiary market for collectable modern and contemporary furniture design was virtually non-existent and indistinguishable from that of decorative arts of the 20th century.

However, in the last decade this market has gained considerable attention by art collectors and, as shown in Table 1, furniture design prices have reached an art market status with several lots in auctions that reached quotations well above one million dollar.

INSERT TABLE 1 ABOUT HERE

The evolution of collectable furniture design market can be described along clear and distinct phases.

During the 70s and 80s, thanks to the influence of some far-sighted collectors and dealers such as Yves Saint Laurent, Andy Warhol, Peter Brant, Ileana Sonnabend and others, Art Deco furniture started gaining a significant niche in the world of antiques art galleries and on the auction market. Some pieces of this period reached remarkable prices and in 1972, in occasion of the auction of the Jacques Doucet collection held by Christie's in Paris, "Le Destin" by Eileen Gray was sold for 170,000 francs (about \$ 36,000 of the time), an unprecedented price for a piece of furniture of that period.

Nevertheless, during the '80s and up to the early 90s, the design market remained still limited, particularly concentrated in the U.S., especially in New York, and managed by a small number of dealers. In the same period Europe experiences the development of a market for historic design, albeit more limited, with the presence of a number of important gate keepers such as the Swiss collector and art dealer Bruno Bischofberger and Rolf Fehlbaum, CEO of the furniture company Vitra and founder of the internationally renowned Vitra Design Museum. The latter, with great insight, at the death of the famous American designer Charles Eames acquired part of his archives transferring them from the United States to Europe.

Crucially, it is during the '90s that furniture design, and especially "mid-century" design, begins its rise, gaining more and more visibility on the secondary art market with a growing number of galleries specialized in this field from François Laffanour in Paris to Demish Danant in New York or Ulrich Fiedler in Cologne and in Berlin, just to mention a few.

Between the late '90s and early 2000s, also auction houses entered the market of design: in 1992 Peter Loughrey founded the Los Angeles Modern Auctions (LAMA), in 1996 Dorotheum held its first auction of design; in the early 2000s in Chicago opened Wright and Philipps de Pury started organizing art design auction.

Interestingly, the first auction houses to get into the collectable furniture design market were the "minor" ones although Christie's and Sotheby's, quickly reacted to such new entrants opening up dedicated divisions.

Today, all main auction houses such as Christie's, Sotheby's, Phillips, Bonhams, Artcurial and Wright, have design departments and auction sessions.

Moreover, with the advent of the "Art Fair Age" (Barragán, 2008), special editions and new commercial events devoted to design also flourished in the international art capitals: in 2005, Ambra Medda and Craig Robins founded Design Miami, in 2009 TEFAF introduced a section devoted to design and design fairs were created in the framework of Frieze, Art Paris, Armory and many others.

Such evolutionary patterns of the collectable furniture design market can be interpreted as the birth and structuring of a new "field" of cultural production (Bourdieu, 1979), where players enter in the field and new institutions are developed to shape agents' interactions and social positions.

Today, it is possible to identify two distinct trends in such field, which express a dichotomizing pattern between the historical and contemporary design.

Rising prices of collectable mid-century furniture design

With regard to modern furniture design, since the '90s this class of works experienced a strong rise in prices. Although there is no specific price index and major industry reports, such as the ones produced by Artprice or TEFAF, do not provide dedicated data, anecdotal evidence suggests that the market has been steadily growing with many quality pieces topping the \$100,000 mark.

As an example, in 1996 Wright sold a coffee table by the prominent Japanese American artist Isamu Noguchi for about \$ 9,000 and in 2005 a very similar piece from the same designer was sold, again by Wright, for \$ 330,000; in the late 90s dealer Patrick Seguin was selling in his Paris gallery a Jean Prouvé Standard chair for about \$150 while in 2010 the cost of the same chair could vary between 5,000 and 7,000 euro. Like the demand for other artworks, the rise in prices varies according to characteristics depending on the aesthetic evaluation of collectors for objects from different periods or styles. Some types of furniture design have experienced faster growth – such as the French design of the '50s - others, such as the classic modernist pieces, have had a more regular price growth without large fluctuations.

Generally, the rise in prices can be attributed to a number of factors such as 1) the big media coverage received since the mid 90s by post-war design with exhibitions, books and films¹; 2) a change in tastes of wealthy individuals that started displaying vintage design furniture along with their collections of contemporary art; 3) a rarefaction of modern furniture design pieces on the market.

The branding process of contemporary furniture design

Another interesting phenomenon of today collectable furniture design market is the increasing relationship with the contemporary art market that brought a number of designers (and architects) to promote their creations as works of art. "In June, 2006, a 20-year-old aluminum chaise by Australian-born industrial designer Marc Newson fetched \$968,000 at Sotheby's in New York. This sum was the highest amount ever

¹ Some examples are the exhibition organized by Barry Friedman in New York with the title *Mackintosh to Mollino: Fifty Years of Chair Design*, the opening in 1989 of the London Design Museum, the numerous exhibitions held at the MoMa in New York ecc.

paid for a piece of furniture by a living designer. Based on that sale, collectors, dealers, and auction-house specialists alike are banking on the rising market value of contemporary design”².

In particular, two factors have contributed to strengthen the relationship between the art market and the market for design: the integration of design objects in contemporary art auctions, and an increasing creative dialogue between artists and designers.

On the one side designers such as Ron Arad, Marc Newson or Zaha Hadid began creating pieces in limited or special editions for a new and fast growing contemporary art design auction and secondary market which, within a few years provided new “capital for ambitious designers to produce experimental work, and accelerated the careers of rising design stars, including Joris Laarman and Maarten Baas in the Netherlands, Martino Gamper and Julia Lohmann in the United Kingdom”.³

On the other side, many contemporary artists decided to approach the design world with specific works, as is the case of Marc Quinn or Thomas Rehberger, or exploring the world of art in editions (as for Jeff Koons, Yayoi Kusama, Takashi Murakami and others).

As for the contemporary art market, museums and “brand galleries” (Thompson, 2008) have played a major role in consecrating super star designers as collectors were increasingly looking to museums such as MoMA to see which designers’ works they were buying or receiving as gifts from prominent collectors and editions of the same pieces of furniture were considered to have higher market value if in a museum collection.⁴

As an example of this process, in January 2007 Larry Gagosian opened in New York a Mark Newson⁵ exhibition and in May Christie’s sold the work “Lockheed Lounge LC-1” by this designer for the personal record price of \$1.497.000.

3. Furniture design objects in the art domain: cultural economic issues

As modern and contemporary furniture design objects are increasingly exchanged as art and collectable items, this emerging trend sets interesting issues and challenges in understanding what are the reasons which have led to attract the attention of collectors and to what extent the demand of modern furniture design objects follows the formation of value and collectors’ preferences as more familiar cultural and artistic goods.

In particular, three main issues are at stake and involve i) the cultural value of design-based goods, ii) the progressive recognition of the designer as artist, iii) the question of uniqueness vs reproducibility of furniture design objects.

The cultural value of design-based good

One of the pillars in the analytical framework of cultural economics is to consider cultural goods to possess both cultural and economic values, whose interaction affect

² Businessweek, December 2006 <http://www.businessweek.com/stories/2006-12-14/20th-century-designs-draw-collectorsbusinessweek-business-news-stock-market-and-financial-advice>.

³ The New York Times, July 2010 http://www.nytimes.com/2010/06/07/arts/design/07iht-design7.html?_r=0.

⁴ Businessweek, December 2006 <http://www.businessweek.com/stories/2006-12-14/20th-century-designs-draw-collectorsbusinessweek-business-news-stock-market-and-financial-advice>.

⁵ <https://www.gagosian.com/exhibitions/january-25-2007--marc-newson>

the demand and supply (Throsby, 2001). What is relevant for our analysis is to understand how cultural value emerge in modern and contemporary furniture design objects and how such a relative increase in cultural appreciation may affect the economic value.

Although created for functional use, it is increasingly recognized that design-based goods own cultural values whose appreciation is the result of two main drivers. First, goods are creative products which embody important symbolic and aesthetic values, which in some cases may overcome the use value. Second, although the functional value may originally dominate, the historicization process of goods with idiosyncratic characteristics (such as their production is deeply rooted in a given time-space) eventually lead to the emergence of cultural values (Santagata, 2004).

The first case is exemplified by the works produced by Memphis, the Milanese collective designers founded in 1981 and led by Ettore Sottsass. This postmodern internationally renowned movement, whose pieces are in all major design museums around the world, from a market point of view experienced relatively low values on the design auction market. Such phenomenon has been explained by experts (Lindemann, 2010) alleging the aesthetic difficulty in placing furniture by Memphis in people's homes.

In the second case, furniture design objects resemble other collectable goods such as antique furniture, comics, wine, or watches, whereby the cultural value of these objects increases with their historicization also due to the role of museums which act as a gatekeeper by making a selection of items intended to make history. The economic value for these goods tend also to increase relative to the original price based on its functional characteristics.

An example of the cultural and economic effects of this historicization process can be seen in the works of the German designer Marianne Brandt whose ashtrays and paper trays produced during her experience at Bauhaus are exhibited in design collections and reached very high market prices.

Designer vs Artist

The issue of the distinction between designer and artist is not only a major one in the history of art and design, but it is also relevant to explain the emergence of modern and contemporary furniture design objects as a form of collectable art.

As design gained ground as a collectable, also designers have been increasingly recognized as artists.

In general, the changing role of the designer in relation to that of the artist can be interpreted in the light of the emphasis that, in various periods, designers have given to either the utilitarian/functional or to the symbolic value of their creations.

For example, in the 20s, German Bauhaus school emphasized the artist-designer as a creator of ideal prototypes for mass production and art, proliferated through serial manufacturing, could, it was believed, substantially change life. For example, according to Walter Gropius, architect and founder of the Bauhaus School:

“Design is neither an intellectual nor a material affair, but simply an integral part of the stuff of life, necessary for everyone in a civilized society.”

After IIWW, the designer became more and more idealized as the true artist of modern society able to understand the needs of society and to solve people’s problems.

This is particularly evident in the Italian cultural tradition that had never been accustomed to strictly separating art and design, beauty and function (Hauffe, 1998): contemporary with American and Scandinavian industrial designers, Italy helped to define the “new humanism” of the post war era (Raizman, 2010). The most noticeable example of the proximity between art and design in Italy is provided, even if in different ways, by personalities such as Carlo Mollino or Bruno Munari. The latter, in his book *Design as Art* (Munari, 1966), wrote:

“Today it has become necessary to demolish the myth of the ‘star’ artist who only produces masterpieces for a small group of ultra-intelligent people [...]. Culture today is becoming a mass affair, and the artist must step down from his pedestal and be prepared to make a sign for a butcher’s shop (if he knows how to do it). [...] The designer is therefore the artist of today, not because he is a genius but because he works in such a way as to re-establish contact between art and the public.”. In the same years, Charles Eames, Munari’s contemporary, in the U.S. declared “We wanted to do the best for the most for the least” and, about art, that “art resides in the quality of doing”, thus turning the ideas of the Bauhaus functionalism towards the new one of “Good Design”⁶.

Since the 70s, however, designers started emphasizing the symbolic value of their creations. As illustrated by Ettore Sottsass, founder of the Memphis Group:

“It is important to realize that whatever we do or design has iconographic references, it comes from somewhere; any form is always metaphorical, never totally metaphysical; it is never a 'destiny' but always a fact with some kind of historical reference. To put an object on a base means to monumentalize it, to make everyone aware it exists.” (Radice and Sottsass, 1993).

In particular, “theoretical ideas grouped under the heading of postmodernism, which emerged in the 1980s, emphasize the semantic value of design, rather than its utilitarian qualities. In other words, it is the meaning of a product, rather than the uses to which it is put, that is the primary criterion in its conception and use. It is not users, however, who are the focus of these concepts, but designers, which opens the door to products taking on arbitrary forms that may have little or nothing to do with use, but are justified by their ‘meaning’” (Heskett, 1980). An icon of this concept of design is the lemon squeezer designed by Philippe Starck, under the name ‘Juicy Salif’.

In the 2000s, the logic of the art market have further strengthened the figure of the artist-designer and the success of design objects where form prevails over function.

This is the case with designers such as Marc Newson and Ron Arad, but also younger designers like Maarten Baas whose works are sold in major galleries that operate between design and contemporary art such as that of Murray Moss or the Galerie Kreo in Paris and London.

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Finally, it should be noted that also in previous decades there are examples of designers who while not denying Good Design principles, thanks to the versatility of their interests, operated astride the worlds of art and design: this is the case of Harry Bertoia and Isamu Noguchi.

Quality, reproducibility and information asymmetry

A third challenge for analysing the market of collectable furniture design objects addresses the problem for buyers and sellers to ascertain the quality of goods in terms of their originality and rarity. While traditional art works, such as paintings, can be copied but not reproduced, in the sense that ultimately there is only one unique original of every work of art (Benhamou and Ginsburgh, 2006), furniture design goods are intrinsically intended as reproducible objects since their conception. For instance, as illustrated by the Multiples Manifesto written by Bruno Munari in the 1968:

a) the multiple is created by the author himself and is not the reproduction of a work of art.

[...]

c) the multiple lends itself to unlimited numbers and low prices regardless of the commercial standing of the executor.

[...]

e) therefore, multiples are not copies, but originals.

From an economic viewpoint, reproducibility has the straightforward effect to solve scarcity, making the price for any single reproduction of furniture design much less than the price paid for the same good if it were one-of-a-kind. However, this is clearly a major concern for collectors in the furniture design market, since scarcity is recognized as a value for potential buyers. Furniture design goods are therefore closer to other types of collectibles like photography or comics.

More specifically, seriality has some distinct effects on prices of collectible furniture design and in the way agents behave in this kind of market. Firstly, if information is available to assess reproductions' quality, for the same serially manufactured work prices change depending on the "originality" of the work, that is the value of later productions is lower than the value of prototypes or early series (Lazzaro, 2006). Secondly, information asymmetry is pervasive, as the value of transactions in secondary and tertiary markets – i.e. galleries and auctions – is affected by the problem to ascertain the level of uniqueness and rarity of pieces. This is particularly in the case of historic design. For certain serial productions, those who buy or sell do not have information on how wide the production is. That has been the case for example with George Nelson's work: Sotheby's started selling lots by this American designer in 1999 but information on the scale of its production and on the rarity of furniture lots was very scarce at that time and, as a consequence, his market within a few years went down (Lindemann, 2010).

As a result, auction houses in particular strive to identify wrong pieces, prototypes, experiments that were not commercially successful as the famous sofa by Noguchi designed for Herman Miller. Further problems in the design market can arise also when an historic object is put back into production when originals are not easily distinguishable from the new series. Finally, it should be noted that information

problems are particularly severe for historic design while for contemporary furniture design, designers have developed clear signals to identify the quality of unique pieces or limited series (Candela et al., 2012) by intentionally splitting between serial/industrial and artistic/special.

4. Data and Empirical Strategy

In this section we propose a preliminary quantitative exploration of the determinants of the prices of modern and contemporary furniture design using hedonic price technique.

The data used are drawn from auctions held in the period 1998-2012 for furniture design objects created by 61 top designers of the XXth. The choice of the designers is based on their prominence according to experts' evaluation. We have chosen five leading sources of the history of furniture design, namely *The Design Encyclopedia*⁷, *Design of the 20th Century*⁸, *Design XX Secolo*⁹, *The A-Z of Modern Design*¹⁰ and the online database *DesignIndex*¹¹, and we selected for our analysis designers included at least in four out of five of these sources.

As for the auction prices, we use in this preliminary setting a subsample of designers' most valuable works, obtained by combining for each designer the ten highest auction prices since 1998 and the top auction result for each year¹². The source of this information is Artfacts.net. Prices are gross of buyers and sellers' transaction fees paid to auction houses and are expressed in US dollars. Other relevant information on furniture design objects' and designers' characteristics were either available from the auction results dataset or collected from the biographies of designers.

While we acknowledge the sample may not be fairly representative of the whole set of furniture design objects hammered at auctions, the large variation in prices, product and designers' characteristics already present in this limited sample helps provide initial insights on the determinants of the value of this class of works, which can be eventually validated extending the analysis to larger samples.

This can be argued at first from Table 2 and Figure 1, which present respectively the list of 47 designers who had works auctioned in the period 1998-2012 and the distribution of products per year of creation in our sample. It is interesting to notice that even considering only the top auction results, there is a large variation both in average prices between designers and in price observations within designers. The most evident case is Eileen Gray with a minimum sale price of 750 US dollars and a maximum of more than 30 millions US dollar. Furthermore, the periods of activity of selected designers and the year of creation of the works in the sample cover most of the XXth century.

INSERT TABLE 2 ABOUT HERE

⁷ Mel Byars, *The Design Encyclopedia*, (New York, 2004)

⁸ Charlotte Fiell and Peter Fiell, *Design of the 20th century*, (Cologne, 2005)

⁹ Decio G.R. Carugati, *Design XX Secolo*, (Milano, 2003)

¹⁰ Bernd Polster, Claudia Newman and Markus Schuler, *The A-Z of Modern Design*, (London, 2006)

¹¹ http://www.designaddict.com/design_index/index.cfm, Last access: November, 2011.

¹² We excluded repeated observations when present in both the subsamples.

INSERT FIGURE 1 ABOUT HERE

The price distribution (Figure 2) is also highly skewed¹³ with about 34% of observations with a price lower than 10000 US dollars, about 35% between 10.000 and 50.000 and only a 20% of observations higher than 100.000 US dollars.

INSERT FIGURE 1 ABOUT HERE

In our empirical analysis the approach used to study the determinants of the value of furniture design objects is the hedonic price technique. The hedonic regression framework takes into account the effect of heterogeneity on prices by controlling for a number of differences in characteristics among furniture design objects. Such technique has been adopted and developed in similar studies analysing the value and the rate of return of investments in collectibles and artworks (Graeser, 1993; Etro and Pagani, 2013; Lazzaro, 2006; Locatelli-Biey and Zanola, 2002; Wyburn, 2012).

In order to handle the severe skewness in auction prices the model is specified in semi-log transformations as follows:

$$\ln p_{ij} = \alpha + \beta X_{ij} + \gamma Z_j + \varepsilon_{ij}$$

where the dependent variable is the logarithm of the sale price of furniture object i created by designer j .

The independent variables refer to characteristics both of the furniture design object sold at auction (X) and of designers (Z) and are classified as follows (See Table 3 for summary statistics of the selected variables):

Product characteristics

- *Year from Creation:* this variable accounts for the time elapsed from the date of production of the furniture object to the sale at auction and it is used to test the effect of the historicization process.
- *Functionality:* The label “modern furniture design” encompass auction sales not only concerning furniture objects, but also other categories of furnishing. Using furniture as a baseline, we introduce a set of dummies according to the object functionality, namely *tableware*, *lighting*, *accessories*, *appliances*, *miscellaneous*.
- *Serial Production:* Although for furniture objects multiplicity is a standard, we try to differentiate between objects serially produced from those with an aura of unicity or rarity. Everytime we can infer from the information of the lot the object is manufactured in a limited series or it is very rare for other contingent reasons, the dummy takes the value of 0.
- *Multiple items:* This variable accounts for the fact that many auction lots of furniture design can be either single pieces or of multiple items, the latter in particular for specific types of furniture (such as chairs) and tableware. Hence,

¹³ Skewness value is 18,1 and Kurtosis is 346,2.

we introduce a dummy, which is equal to 1 if a furniture design lot is composed of multiple items and zero otherwise.

- *City of Sale and Auction houses:* The most renowned auction markets for traditional artworks sales are New York and London. We introduce two dummy variables to test whether auction sales in these places command premium prices for modern furniture design. Likewise, we define dummies accounting for the main auction houses, including those specialized in modern furniture design sales, namely Sotheby's, Christie's, Bohnams, Wright, Phillips de Pury's.

Designer Characteristics

- *Designer Death:* we consider a dummy that have the value 1 if the designer is no longer alive to test whether, like more traditional artworks markets, the death of the designer does restrict the supply of her works on the market and induce a speculative demand, possibly leading to a higher price for her products.
- *Designer community:* we introduce a set of dummies to express the cultural-national community to which the design belong or has been more active: Italian, German, American, French, Scandinavian¹⁴ and Other (used as the baseline).
- *Designer prominence:* to account for the recognition of designer's work we use artist ranking system developed by Artfacts.net. For each artist recognition is measured according to various criteria: an artist's relation to an institution and the nature of it, the number of countries they are represented in, the number of galleries or museums showing or collecting their work and the standing of these galleries and museums and lastly, what kind of shows they have participated in, one-person or group shows and if group shows, then who with. Depending on how they fulfil each criterion, the artist gains a number of points. We use this measure as a proxy of artistic prominence.

5. Results

Table 4 shows the results of the OLS estimate for the price equation, with robust standard errors procedure as developed by White (1980) due to heteroschedasticity. Column 1 presents the benchmark regression, while in column 2 and 3 we add time and designers dummy variables to take into consideration potential time trend in auction prices and unobservable characteristics of designers.

Generally, the estimated parameters in column 1 and 2 take the expected sign but require some interpretation.

The price level is significantly and positively affected by the number of years from the creation date, confirming the effect of the historicization process on the value of furniture design object. Each additional year increases the price of furniture design

¹⁴ For German designers we consider also Austrian, Dutch, Czech and Hungarian designer. For Scandinavian designer we include those from Denmark, Sweden and Finland. American designers are also considered those who immigrated in US and had their main professional career in this country (i.e. Eero Saarinen).

objects of about 1%. As expected, the objects that are serially reproduced through industrial techniques lead to a lower price of about 60%. Similarly, designer's prominence does positively affect the price: an increase of 100 points in the Artifacts ranking system raise the value of the furniture design object of 2%. However, the death of the designer does not significantly affect the value. This may be also due to the fact that some of the most valuable products are from contemporary designers who are still alive. More interestingly, it can be noted that being the product from designers of the more important design communities (US, Italian, German, French and Scandinavian) negatively impact the auction price in comparison with the benchmark case. This can be explained if one considers that in the sample the most valuable works come from three designers that are outside from such design communities, namely Eileen Gray (Ireland), Ron Arad (Israel) and Mark Newson (Australia).

As for the type of functionality, there are no significant coefficients compared to the benchmark category of Furniture except for the *Miscellaneous* objects. Products in this category display a higher price of 66% over the benchmark group. This result may be interpreted considering that in the Miscellaneous category we find furniture design objects that are often unique and rare pieces or close to artistic products, such as sculptures for which collectors may be willing to pay a higher price.

Table 3 also shows interesting results as to the relative importance of auction houses and auction cities in the market of modern and contemporary furniture design.

First, the traditional auction markets of New York and London do not lead to higher prices as for traditional artworks. On the contrary, objects sold in New York had a lower price of about 50%. Furthermore, while Sotheby and Christie's remain two auction houses where the recorded prices for furniture design objects are higher than other auction houses, Philips de Pury commands the hammered prices for this category of collectible goods. This joint evidence may suggest that new leading players and centers are emerging in the furniture design auction market.

6. Conclusion

In this paper a preliminary attempt is made to explain the prices paid for modern and contemporary furniture design objects created by prominent designers. After documenting the recent development of the market and discussing the key features of collectible furniture design goods from an economic viewpoint, we studied how specific designers' and products characteristics affect the formation of auction prices.

The market for this kind of goods possesses both similarities and distinctive features compared to other markets of collectibles and works of art. Our main results indicate that prominence of designers and the numbers of years from the time of creation positively influence the price while serial production of the sold objects negatively affects the value. Further evidence suggests also that recorded prices are higher in auction houses and cities of sales other than the more established auction markets.

These results shall nevertheless be considered as offering just initial insights in the comprehension of the phenomenon as this is a preliminary attempt at investigating auction price formation with evidence based on a limited sample of auction prices

from the most valuable products created by 47 prominent designers. In this perspective, we believe that additional empirical analysis is necessary to validate the hypotheses and to shed new light on the understating of collectables furniture design markets.

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Tables and Figures

Figure 1 – Distribution of products per year of creation

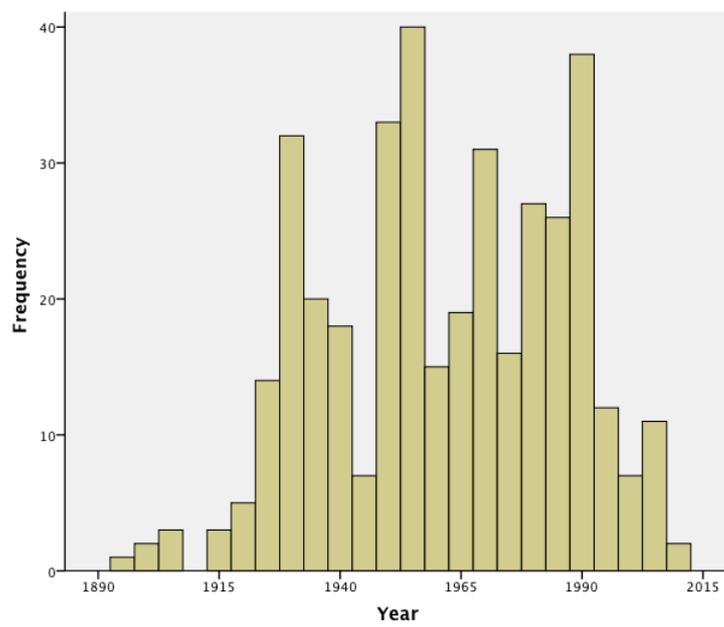


Figure 2 – Distribution of hammer prices, US dollars. (axes with exponential scale)

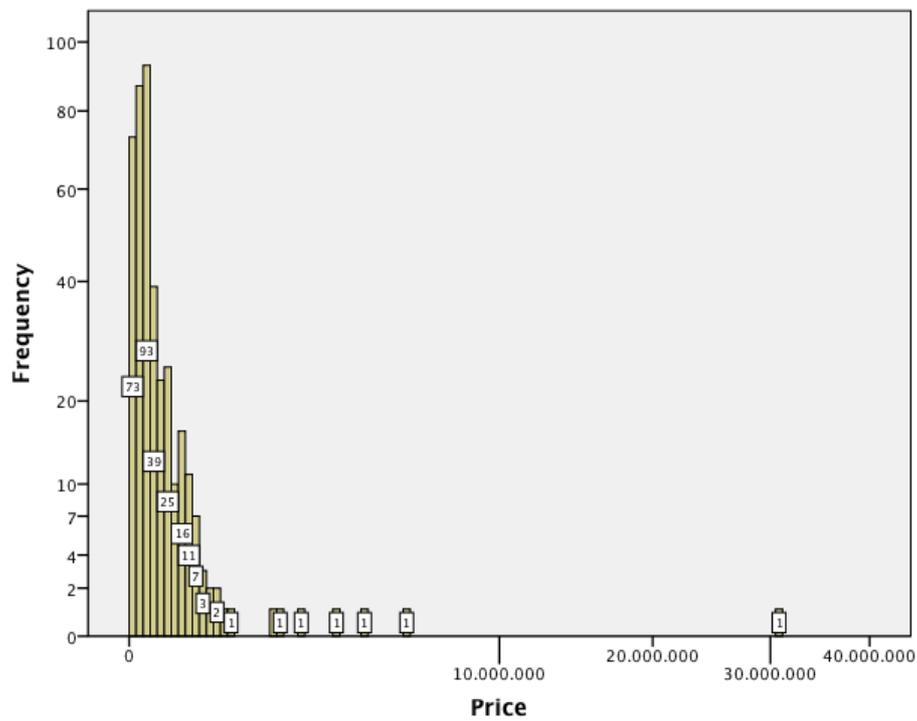


Table 1 – Top auction sales of lots per periods of furniture design history.

Lot name	Year of Creation	Year of Sale	Designer	Price US\$	Auction House
<i>1900-1945</i>					
FAUTEUIL AUX DRAGONS	1918	2009	Eileen Gray	30.553.094	Christie's Paris
ENFILADE	1916	2009	Eileen Gray	5.558.278	Christie's Paris
SUSPENSION 'SATELLITE'	1925	2009	Eileen Gray	4.152.320	Christie's Paris
CONSOLE, AVANT 1920	1918	2009	Eileen Gray	3.215.014	Christie's Paris
Fauteuil "Grand Repos"	1930	2011	Jean Prouvé	656.236	Artcurial Briest-Poulain-F. Taian
<i>1946-1965</i>					
An Important Ebonized Wood and Glass Occasional Table	1950	2009	Carlo Mollino	602.500	Christie's New York
Screen Tree	1955	2012	Harry Bertoia	578.500	Christie's New York
Bush	1965	2010	Harry Bertoia	446.500	Sotheby's New York
Money Trees	1964	2009	Harry Bertoia	278.500	Wright
Dandelion	1965	2007	Harry Bertoia	276.000	Sotheby's New York
<i>1966-2012</i>					
Prototype "Lockheed Lounge"	1988	2010	Marc Newson	2.098.500	Phillips de Pury, Chelsea
Rare and important Lockheed Lounge	1988	2009	Marc Newson	1.726.953	Phillips de Pury, London
Lockheed Lounge LC-1	1988	2007	Marc Newson	1.497.000	Christie's London
ORGONE STRETCH LOUNGE'	1993	2008	Marc Newson	780.093	Sotheby's London
Pod of Drawers	1990	2009	Marc Newson	458.500	Christie's New York

Table 2 – Designers included in this study, average price and observations

Designer	Average price US	N. of Observations	Min	Max
Achille Castiglioni (1918 - 2002)	5.329	10	950	33.203
Alberto Meda (1945 -)	23.750	1	23.750	23.750
Aldo Rossi (1931 - 1997)	3.340	1	3.340	3.340
Alessandro Mendini (1931 -)	46.588	11	3.900	144.841
Alvar Aalto (1898 - 1976)	17.827	16	4.800	31.746
Andrea Branzi (1938 -)	15.186	10	3.125	36.000
Carlo Mollino (1905 - 1973)	158.800	8	22.500	602.500
Charles Eames (1907 - 1978)	7.365	8	2.500	15.000
Charles Rennie Mackintosh (1868 - 1928)	57.308	1	57.308	57.308
Dieter Rams (1932 -)	13.750	1	13.750	13.750
Eero Saarinen (1910 - 1961)	8.162	9	3.750	18.849
Eileen Gray (1878 - 1976)	6.212.387	7	750	30.553.094
Enzo Mari (1932 -)	7.270	4	580	18.189
Ettore Sottsass (1917 - 2007)	44.796	12	10.200	97.000
Frank Lloyd Wright (1867 - 1959)	56.963	13	13.145	114.000
Gaetano Pesce (1939 -)	27.176	15	4.690	97.000
Gerrit Rietveld (1888 - 1965)	24.345	10	11.875	40.926
Gio Ponti (1891 - 1979)	83.904	14	45.600	140.385
Harry Bertoina (1915 - 1978)	190.692	19	19.550	578.500
Henry Dreyfuss (1904 - 1972)	4.200	1	4.200	4.200
Isamu Noguchi (1904 - 1988)	57.500	1	57.500	57.500
Jasper Morrison (1959 -)	23.810	5	10.625	40.926
Jean Prouvé (1901 - 1984)	146.926	14	26.400	656.236
Josef Frank (1885 - 1967)	19.884	11	3.750	103.148
Kaj Franck (1911 - 1989)	3.489	4	527	7.680
Le Corbusier (1887 - 1965)	181.422	1	181.422	181.422
Ludwig Mies van der Rohe (1886 - 1969)	70.443	10	7.200	344.841
Marc Newson (1962 -)	575.691	15	960	2.098.500
Marcel Breuer (1902 - 1981)	29.256	15	2.750	121.000
Marco Zanuso (1916 - 2001)	3.251	7	250	8.125
Marianne Brandt (1893 - 1983)	17.893	11	938	142.857
Mario Bellini (1935 -)	5.296	10	1.913	13.200
Matteo Thun (1952 -)	952	3	250	2.125
Michael Graves (1934 -)	20.000	1	20.000	20.000
Michele De Lucchi (1951 -)	4.262	12	1.124	21.154
Philippe Starck (1949 -)	9.075	10	2.550	50.000
Poul Henningsen (1894 - 1967)	74.512	10	20.161	212.500
Raymond Loewy (1893 - 1986)	10.698	7	2.750	20.000
Ron Arad (1951 -)	242.056	14	144.444	409.000
Ross Lovegrove (1958 -)	111.561	2	899	222.222
Shiro Kuramata (1934 - 1915)	124.101	14	5.400	331.048
Tapio Wirkkala (1915 - 1985)	17.198	12	1.920	59.375
Timo Sarpaneva (1926 -)	8.014	10	2.215	26.400
Verner Panton (1926 - 1998)	28.872	12	5.400	91.953
Vico Magistretti (1920 - 2006)	1.514	10	730	3.472
Walter Gropius (1883 - 1969)	7.963	6	2.750	20.400
Wilhelm Wagenfeld (1900 - 1990)	4.976	2	4.000	5.952

Table 3 – Summary Statistics

	Mean	Min	Max	St.Dev	N. Observations
LnPrice	9,944	5,521	17,235	1,762	400
Years From Creation	46,97	1	110	24,342	382
Accessories	0,066	0	1	0,248	396
Appliances	0,013	0	1	0,1118	396
Lighting	0,116	0	1	0,3208	396
Miscellaneous	0,114	0	1	0,3178	396
Tableware	0,048	0	1	0,214	396
SerialProduction	0,492	0	1	0,5006	396
Multiple Items	0,225	0	1	0,4183	395
New York	0,45	0	1	0,4981	400
London	0,3	0	1	0,4588	400
Sotheby's	0,16	0	1	0,3671	400
Christie's	0,19	0	1	0,3928	400
Phillips de Pury	0,388	0	1	0,4878	400
Wright	0,083	0	1	0,2755	400
Bonhams	0,065	0	1	0,2468	400
Designer Death	0,68	0	1	0,467	400
Italian	0,32	0	1	0,467	400
American	0,16	0	1	0,362	400
German	0,14	0	1	0,347	400
French	0,08	0	1	0,272	400
Scandinavian	0,16	0	1	0,367	400
Prominence (100 points)	9,5751	0,0011	44,4689	9,1983	393

Table 4 – Price Equation

Dependent Variable:			
	(1)	(2)	(3)
Years From Creation	0.013*** (0.005)	0.013** (0.005)	0.010** (0.005)
Accessories	0.116 (0.301)	0.096 (0.293)	0.242 (0.249)
Appliances	-0.694 (0.759)	-0.351 (0.790)	-0.440 (0.695)
Lighting	-0.119 (0.206)	-0.136 (0.200)	0.312 (0.205)
Miscellaneous	0.511** (0.259)	0.504** (0.251)	-0.101 (0.295)
Tableware	-0.344 (0.377)	-0.482 (0.415)	0.248 (0.385)
SerialProduction	-0.934*** (0.165)	-1.035*** (0.164)	-0.827*** (0.170)
Multiple Items	-0.454*** (0.174)	-0.464** (0.180)	-0.270* (0.156)
New York	-0.654* (0.396)	-0.712* (0.424)	-1.162*** (0.418)
London	-0.454 (0.391)	-0.653 (0.408)	-0.841** (0.411)
Sotheby's	1.340*** (0.461)	2.039*** (0.476)	1.657*** (0.512)
Christie's	1.601*** (0.463)	1.801*** (0.491)	1.584*** (0.503)
Phillips de Pury	1.911*** (0.481)	2.199*** (0.523)	1.875*** (0.538)
Wright	0.168 (0.345)	0.152 (0.356)	-0.088 (0.294)
Bonhams	0.499 (0.516)	0.695 (0.548)	0.997* (0.539)
Designer Death	0.274 (0.201)	0.243 (0.205)	0.255 (0.629)
Italian	-1.885*** (0.306)	-1.862*** (0.302)	-1.763 (1.859)
American	-1.548*** (0.385)	-1.531*** (0.386)	0.254 (1.777)
German	-2.327*** (0.419)	-2.248*** (0.419)	0.548 (1.844)
French	-0.993** (0.392)	-0.839** (0.387)	-0.952 (1.732)
Scandinavian	-1.959*** (0.353)	-1.958*** (0.341)	-0.158 (1.896)
Prominence (100 points)	0.026*** (0.007)	0.017** (0.007)	-0.037* (0.019)
Constant	10.164*** (0.354)	9.849*** (0.509)	7.780*** (1.752)
Time dummies	NO	YES	YES
Designers Dummies	NO	NO	YES
R2	0.488	0.531	0.767
N. Observations	373	373	373

Standard errors in parentheses. * p<0.1, ** p<0.05, *** p<0.001